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(54) Triplate fed dipole

(57) An antenna is formed by a triplate fed dipole 1 having one dipole arm 2, 3 formed from each triplate outer conductor, e.g. 6. The dipole arms extend in the same direction as the outer conductors and may be parallel or at an angle thereto. The dipole is electrically connected to a central conductor 5 of the triplate. A ground reflector 13 is provided.

Figure 1

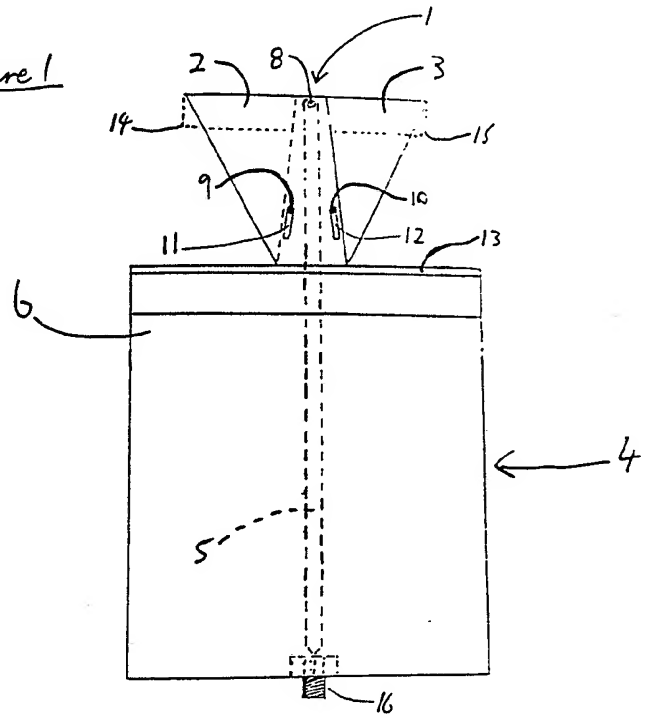

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Figure 1

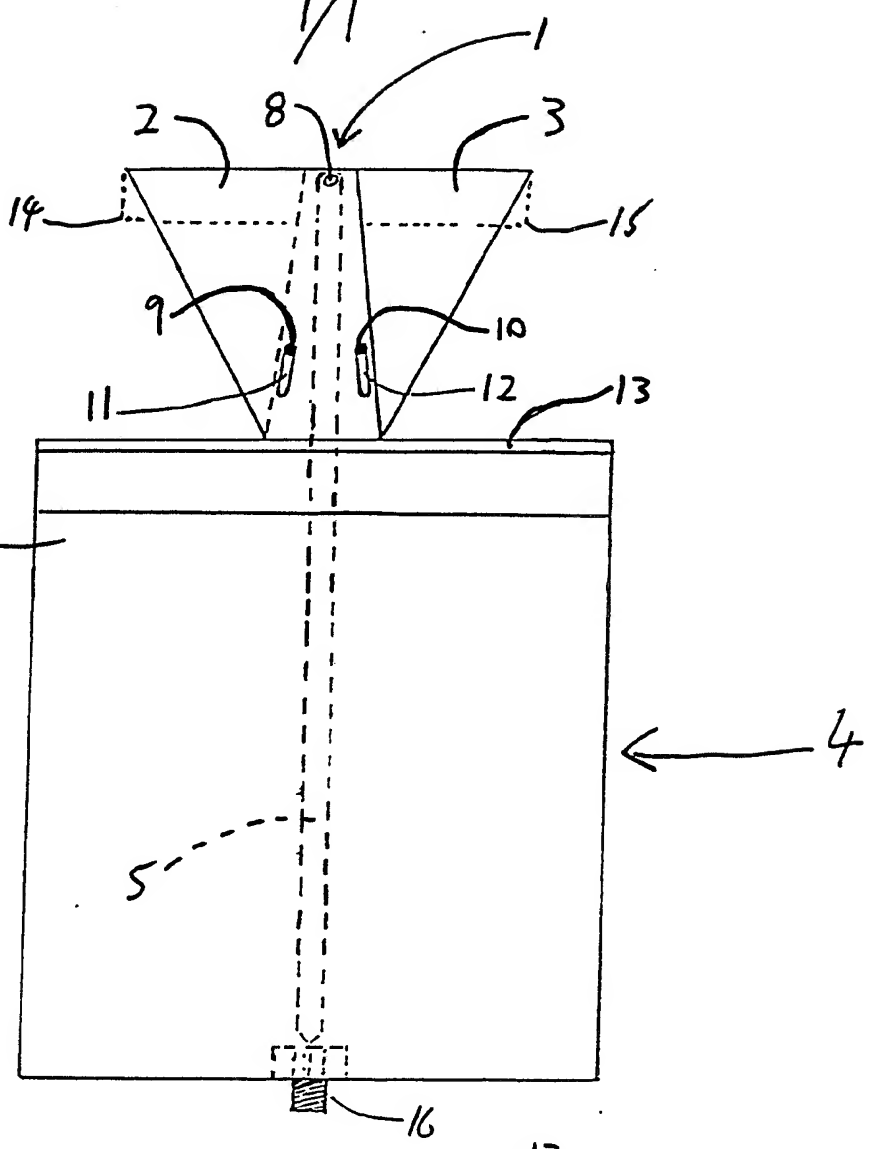
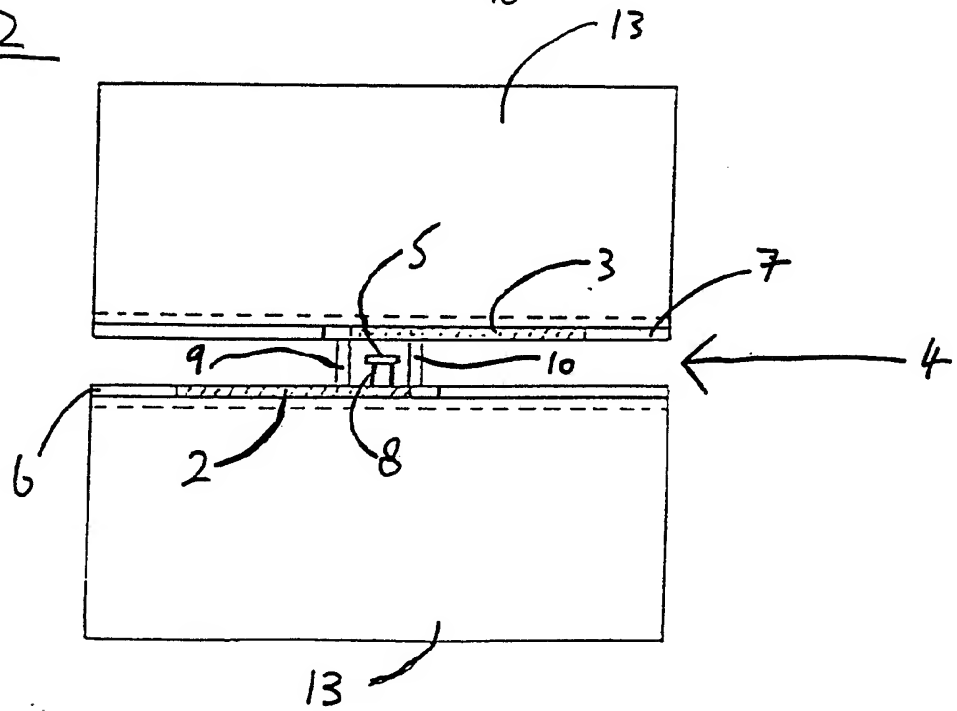


Figure 2



A Triplate Fed Dipole

This invention relates to triplate fed dipoles.

In triplate fed dipoles it is desirable to form the dipole arms from the outer conductors of the triplate feed structure in order to simplify manufacture and assembly of the dipole and feed structure.

There are two main methods of constructing such dipoles. The first is to form both arms of a dipole from one of the triplate outer conductors and feed the dipole from a co-axial line connected to the triplate inner conductor. A significant part of the cost of manufacturing such a construction arises because of the need to provide the co-axial line, which forms a transition between the triplate and the dipole.

In the second method two dipole arms are formed from each of the triplate outer conductors and the four dipole arms are connected together to form a single dipole. Although this allows the dipole to be fed directly from the triplate central conductor, thereby eliminating the cost of the co-axial lines, the complexity and expense of producing four arms for each dipole instead of two at least partly nullifies this advantage. Furthermore, the extra weight of the dipole can be a problem in some environments.

This invention provides a dipole having a triplate

feed structure and comprising two dipole arms formed from respective outer conductors of the triplate, the dipole arms extending in the same direction as the outer conductors, and the dipole being electrically connected to a central conductor of the triplate.

Although this construction results in a dipole with arms that are parallel but not coplanar it has been found, suprisingly, that such a dipole does not have performance significantly worse than one having coplanar arms.

An embodiment of the invention will now be described in detail with reference to the accompanying figures in which;

Figure 1 shows a dipole constructed in accordance with the invention in side view; and

Figure 2 shows the dipole of Figure 1 in top view; identical parts having the same reference numerals throughout.

Refering to the Figures, a dipole 1 is formed by two dipole arms 2 and 3. The dipole 1 is fed by a triplate feed system 4 comprising an inner conductor 5 and two outer conductors 6 and 7.

The dipole arm 2 is formed from an extension of the triplate outer conductor 6 and the dipole arm 3 is formed from an extension of the triplate outer conductor 7.

The dipole 1 is fed with signals by the triplate inner conductor 5 which passes between the dipole arms 2 and 3 and is electrically connected to the dipole arm 2 by

a conductive pin 8. The two dipole arms 2 and 3 are electrically linked by two conductive pins 9 and 10. This electrical link forms a balun and allows the two dipole arms 2 and 3 to act as a dipole 1.

The conductive pins 9 and 10 are in slots 11 and 12 respectively. The pins 9 and 10 can be moved up and down the slots 11 and 12 in order to tune the dipole 1.

A ground plane 13 is used to provide a unidirectional radiation pattern from the dipole 1.

Signals to be transmitted or received are fed to or from the triplate inner conductor 5 through the plug 16. The plug 16 can be connected to any required transmitting or receiving system.

The profile of the dipole arms 2 and 3 is one that has been found to give a wide bandwidth. they could be changed to any other profile. such as the more conventional one shown by the dotted lines 14 and 15 if this were preferred.

The slots 11 and 12 can be omitted if it is already known which positions of the pins 9 and 10 will put the dipole 1 in tune.

Although the invention has been described with reference to a triplate structure it could be applied to any type of multiplate feed system. A multiplate feed system being one in which a plurality of signal carriers are interleaved with conductive plates.

The dipole arms 2 and 3 are shown in the diagrams as being parallel to the triplate outer conductors 6 and 7, the dipole arms 2 and 3 could be placed at an angle to the outer conductors 6 and 7 provided they extended in the same direction as the outer conductors 6 and 7.

CLAIMS

1. A dipole having a triplate feed structure and comprising two dipole arms formed from respective outer conductors of the triplate, the dipole arms extending in the same direction as the outer conductors, and the dipole being electrically connected to a central conductor of the triplate.

2. A dipole as claimed in claim 1 in which the dipole arms are parallel but not coplanar.

3. A dipole as claimed in Claim 1 or Claim 2 in which the two dipole arms are coplanar with the outer conductors from which they are formed.

4. A dipole as claimed in any preceding claim in which a ground reflector is arranged in cooperation with the dipole to give a unidirectional radiation pattern.

5. A dipole substantially as shown in and substantially as described with reference to the accompanying drawings.

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